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Nitric oxide (NO) a key bioregulator of blood pressure is formed in the endothelium cells that line the arteries. Others have postulated that NO reacts with hemoglobin (Hb) to give SNO-Hb and that the latter is the reservoir for NO in the cardiovascular system. While SNO-Hb has been detected in red blood cells exposed to NO, the actual pathways by which it is formed are unknown.

A recent investigation by UCSB Ph.D. candidate Bernadette Fernandez has demonstrated that the ferric ion form of Hb (met-Hb) is readily reduced by NO in a reaction catalyzed by nitrite ion (NO_2^-). The likely catalysis mechanism would lead to formation of the strong nitrosating agent N_2O_3 at a location near the cys- β 93 where SNO-Hb carries NO. This provides a hypothesis for SNO-Hb formation as illustrated. Ms. Fernandez has determined the rates by which NO reduces mHb and is probing this and related systems for the formation of nitrosylated proteins.

